

REMARKS

Applicant thanks the examining attorney for his guidance in properly formatting a response to an Office Action for a reissue patent application. Applicant has considered all points made by the examining attorney has responded to same in order to ensure compliance with 37 C.F.R. § 1.173 and other the applicable rules.

1. Changes in Claims From Previous Version of Claims.

The most recent version of claims are contained in the response to the Office action of June 26, 2003. Claims 1, 11, 12, and 29 have been amended since the June 26, 2003 response. Applicant provides herein marked-up claims illustrating the changes from the June 26, 2003 response.

A. Claim 1.

1. A heat exchanger for a deep fryer system, the heat exchanger being within a vat containing shortening, the heat exchanger comprising, in combination:

at least one heat transfer conduit having a heating fluid passing therethrough;

a baffle plate disposed within the at least one heat transfer conduit, defining a plane and having a first surface, an opposed second surface, and a longitudinal axis which divides the baffle plate into a first portion and a second portion;

a plurality of tabs, each tab comprised of a portion of the baffle plate which is cut from the baffle plate and bent away from one of the first and second surfaces, the tab leaving a hole in the baffle plate and having a longitudinal axis and extending outwardly away from one of the first and second surfaces of the baffle plate, an intersection of the tab and the baffle plate defining a crease, a plurality of the tabs being positioned in the first portion of the baffle plate and a plurality of the tabs being positioned in the second portion of the baffle plate, a plurality of the tabs extending outwardly from the first surface and a plurality of the tabs extending outwardly from the second surface; and

a plurality of webs, each web separating a tab from another tab adjacent the tab in a direction substantially perpendicular to the longitudinal axis of the tab.

B. Claim 11.

11. A heat exchanger according to claim 1, wherein the crease of each tab is upstream, with respect to the flow of heating fluid, of a main body of [the] each tab.

C. Claim 12.

12. A heat exchanger according to claim 1, wherein the crease of each tab is downstream, with respect to the flow of heating fluid, of a main body of [the] each tab.

D. Claim 29.

29. A heat exchanger for a deep fryer system having a gas burner to heat fluid flowing through the heat exchanger, the heat exchanger being contained within a vat containing shortening, the heat exchanger comprising, in combination:

at least one heat transfer conduit having heating fluid passing therethrough;

a baffle plate disposed within the at least one heat transfer conduit defining a plane and having a first surface, an opposed second surface, and a longitudinal axis which divides the baffle plate into a first portion and a second portion;

a plurality of tabs, each tab having a longitudinal axis and extending outwardly away from one of the first and second surfaces of the baffle plate, an intersection of the tab and the baffle plate defining a crease, the crease being created by bending the tab from the baffle plate, at least one of the tabs being positioned in the first portion of the baffle plate and at least one of the tabs being positioned in the second portion of the baffle plate;

the baffle plate being positioned within the heat transfer conduit and the tabs having a length and an angle which position the tabs relative to the heat transfer conduit so the tabs do not contact

the heat transfer conduit and do not prevent the heating fluid from flowing between the tabs and the portions of the heat transfer conduit most closely adjacent to each of the tabs;

the tabs being comprised of a portion of the baffle plate which is cut from the baffle plate and bent away from one of the first and second surfaces, each of the tabs leaving a hole in the baffle plate;

at least a portion of a side of each hole comprised of the crease of the tab which was cut and bent from the baffle plate to leave the hole, the tab and the hole which share a crease defining a tab/hole pair;

a plurality of webs, each web separating a first tab/hole pair from a second tab/hole pair which is adjacent to the first tab/hole pair in a direction substantially perpendicular to the longitudinal axis of the tab;

a plurality of the tabs being bent outwardly away from the first surface and a plurality of the tabs being bent outwardly away from the second surface;

at least five [six] rows of tab/hole pairs, each row extending in a direction substantially perpendicular to the longitudinal axis of the baffle plate and having at least four tab/hole pairs and at least three webs, each of the tab/hole pairs in each row being separated from each adjacent tab/hole pair in the row by a web;

a plurality of rows of tab/hole pairs, which rows each have a tab/hole pair positioned in the first portion of the baffle plate and a tab/hole pair positioned in the second position of the baffle plate;

a plurality of rows of tab/hole pairs, which rows have a tab extending outwardly away from the first surface of the baffle plate and a tab extending outwardly away from the second surface of the baffle plates;

the tab/hole pairs being arranged on the baffle plate so that an equal number of tabs are on either side of the center line of the first surface of the baffle plate and the tab/ hole pairs are arranged on the first surface of the baffle plate symmetrically about the center line of the baffle plate and so an equal number of tabs are on either side of the center line of the second surface of the baffle plate and the tab/hole pairs are arranged on the second surface of the baffle plate symmetrically about the center line of the baffle plate;

the baffle plate is positioned and shaped so that the tabs are capable of deflecting the heating fluid so that the heating fluid is capable of flowing (1) through the holes, (2) between the tabs, (3) adjacent the webs and (4) between the tabs and the heat transfer conduit so the baffle plate, tabs, holes and webs are capable of collectively causing increased turbulence of the heating fluid passing through the heat transfer conduit, the increased turbulence improving heat transfer from the heating fluid within the heat transfer conduit to the shortening within the vat of the deep fryer system as compared to a similar heat exchanger for a deep fryer system which does not utilize a baffle plate.

2. Status of Claims.

Pursuant to 37 C.F.R. § 1.173(c), Applicant provides the status of each claim.

A. Original Claims 1 – 25:

Claims 1, 11, and 12 are pending and have been amended three times vis-à-vis the claims of the original patent.

Claims 6, 8, 9, and 25 are pending and twice amended vis-à-vis the claims of the original patent,

Claims 2-5 remain cancelled,

Claims 7, 10, and 14 – 24 are pending and have not been amended thus far.

B. New Claims 26 – 43:

Claim 29 is pending and has been amended twice.

Claims 26, 27, 30, 32, 33, 37, 38 and 42 are pending and have been amended once.

Claims 28, 31, 34-36, 39 – 41, and 43 are pending and have not been amended thus far.

3. Support for Claim Changes.

Pursuant to 37 C.F.R. § 1.173(c), Applicant provides support for each claim changed by amendment herein.

A. Claim 1.

Claim 1 (and as a result claims 6-9, 12, 14-19, and 22-24 since they depend from claim 1) was objected to because of informalities. Specifically, claim 1 was objected to because it did not end in a period. Applicant has amended claim 1 to correct the complained of informality.

Support for the other Claim 1 changes may be found in the original patent Column 1, Lines 11-23; Column 3, Lines 36-65; Column 4, Lines 60-63 and Figures 3, 4 and 5. Further, the use of the term “heating fluid” instead of “hot gases” is consistent with the original claims; see original claims 1, 8, 9, 10, 11, 12, 13, 20, 21 and 25 which utilize the term “heating fluid”.

B. Claim 6.

See Figures 3, 5 and 10; Column 2, Lines 2-8; Column 2, Line 29; and Column 4, Line 50.

C. Claim 8.

See Column 1, Line 16; Column 13, Lines 16-17; Column 3, Lines 36-65, and Figure 3. The use of the term “heating fluid” instead of “hot gases” is consistent with the original claims; see original claims 1, 8, 9, 10, 11, 12, 13, 20, 21 and 25 which utilize the term “heating fluid”.

D. Claim 10.

In the Office Action dated April 9, 2004, in claim 10, the examining attorney cited “the crease of at least one tab is positioned directly downstream with respect to the flow of heating fluid,

of the web between two tabs which are adjacent and upstream of at least one tab” as new matter. This claim is an inherent feature of Applicant’s invention. Referring to Figure 8, it will be noticed that web 46 is positioned between two tabs 42. Immediately downstream, with respect to the flow of the heating fluid, is the crease for another tab. This configuration may also be seen in Figure 9. Because drawings alone are sufficient to meet the written description requirement of § 112, *Vas-Cath*, 935 F.2d at 1565, this claim cannot constitute new matter.

E. Claim 11.

In claim 11, the examining attorney cited “crease of each tab is upstream … of a main body of the each tab” as new matter. This claim is an inherent feature of Applicant’s invention. Referring to Figure 6, it will be noticed that each crease 44 is positioned directly upstream, with respect to the flow of the heating fluid, of each tab 42.

F. Claim 13.

In claim 13, the examining attorney cited “the crease of at least one tab … upstream of a main body of at least one tab …” as new matter. Support for this claim may be found at Column 4, Lines 30-33, “plate 40 may be oriented so that its leading and trailing edges are reversed, that is, the leading edge will be crease 44 and the trailing edge will be the outermost edge of tab 42 with respect to plate 40,” and Column 4, Lines 36-38, “crease 44 of each tab 42 is one of upstream or downstream, with respect to the flow of heating fluid, of the main body of its tab 42.”

G. Claim 20.

In claim 20, the examining attorney cited “a portion of the baffle plate has a greater number of tabs than an equally sized portion of the baffle plate which is upstream, with respect to the flow of the heading fluid, of the portion of the baffle plate” as new matter. This claim is an inherent feature of Applicant’s disclosure. Referring to Figure 9, it will be seen that the number of tabs on the downstream (right) side of the figure is greater than the number of tabs on the upstream (left) side of the figure.

H. Claim 21.

In claim 21, the examining attorney cited “the number of tabs per unit length increases along the baffle plate in a downstream direction with respect to the flow of heating fluid” as new matter. Support for this claim may be found at Column 2, Lines 21-23, “[t]he number of tabs per unit length increases along the baffle plate in a downstream direction with respect to the flow of heating fluid.” Further support may be found at Column 5, Rows 52-54, “the number of tabs 42 per unit length of plate 40 increases along plate 40 in a downstream direction to provide increased heat transfer.”

I. Claim 25.

In claim 25, the examining attorney cited “the crease of at least one tab being directly downstream … of the web between two other tabs which are adjacent and upstream,” as new matter. Support for this claim may be found at Column 2, Rows 18-21, “[t]he crease of at least one tab is directly downstream, with respect to the flow of heating fluid, of the web between two other tabs which are adjacent and upstream of the at least one tab.”

J. Claim 26.

In claim 26, the examining attorney cited “the baffle plate being positioned within the heat transfer conduit and shaped so that the tabs are capable of deflecting the heating fluid so that the heating fluid is capable of flowing (1) through the holes, (2) between the tabs, (3) adjacent to the webs and (4) between the tabs and the heat transfer conduit so the baffle plate, tabs, and holes are capable of collectively causing increased turbulence of the heating fluid passing through the heat transfer conduit, the increased turbulence improving heat transfer from the heating fluid within the heat transfer conduit to the shortening within the vat of the deep fryer system as compared to a similar heat exchanger for a deep fryer system which does not utilize a baffle plate” as new matter. Referring to Figure 3, it is seen that “[a]s the heated air flows through heat transfer tube 16 it is deflected by tabs 42, increasing the turbulence of the flow within heat transfer tube 16, illustrated by the arrows B shown in FIG. 3. The increased turbulence in heat transfer tube 16 thereby enhances the heat transfer from the heated air, through heat transfer tube 16, to the shortening in the vat.” (Column 4, Lines 8-14). Figure 3 also illustrates the flow of heating fluid through holes, between tabs, and adjacent to webs.

K. Claim 27.

In claim 27, the examining attorney cited “a plurality of tabs are positioned directly downstream … of the web between two tabs which are adjacent and downstream of the plurality of tabs” as new matter. Support for this claim may be found at Column 2, Rows 18-21, “[t]he crease of **at least one tab** is directly downstream, with respect to the flow of heating fluid, of the web between two other tabs....” (emphasis added). “Use of the phrase ‘at least one’ means that there could be only one or more than one.” *Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999).

L. Claim 29.

In claim 29, the examining attorney cited “… at least six rows of tab/hole pairs … at least four tab/hole pairs and at least three webs … the tab/ hole pairs are arranged on the first surface of the baffle plate symmetrically about the center line of the baffle plate … the baffle plate is positioned and shaped so that the tabs … capable of flowing (1) through the holes, (2) between the tabs, (3) adjacent the webs and (4) between the tabs … causing increased turbulence … the increased turbulence improving heat transfer from the heating fluid …” as new matter.

Applicant has amended Claim 29 to call for at least five rows of tab/hole pairs rather than six. Support for this amended claim may be found in Figure 8 wherein it is seen that there are at least five rows of tab/hole pairs, each row extending in a direction substantially perpendicular to the longitudinal axis L of the baffle plate and each row having at least four tab/hole pairs and at least three webs.

M. Claim 30.

In claim 30, the examining attorney cited “at least a portion of the webs are positioned directly upstream … of a tab located in an immediately downstream row of tabs...” as new matter. This claim is an inherent feature of Applicant’s disclosure. Referring to Figures 8 and 9, it will be seen that the number of webs are indeed located directly upstream of a tab located in an immediately downstream row of tabs.

N. Claim 32.

In claim 32, the examining attorney cited “the tabs are located, and shaped ... causing increased turbulence of the heating fluid .. to improve heat transfer from the heating fluid...” as new matter. Support for this claim may be found at Column 5, Lines 20-25, “By angling the tabs upwardly and downwardly as well as outwardly, the flow of heated air is deflected up and down as well as left and right ... within the heat transfer tubes, thereby providing additional mixing of the heated air.” Further support may be found at Column 4, Lines 63-67, “in the case where heated air is flowing from left to right in the embodiment illustrated in FIG. 5, tabs 42 are oriented in such a manner as to direct the heated air primarily from the center towards the walls of the heat transfer tube 16 to improve the heat transfer at the walls.” Still further support may be found at Column 3, Lines 61-65, “It is also to be appreciated that tabs 42 may have a shape other than the substantially rectangular shape shown in FIG. 2, e.g., circular, oval, or any other suitable shape which will become obvious to those skilled in the art given the benefit of this disclosure.”

O. Claim 33.

In claim 33, the examining attorney cited “each tab extends outwardly at an acute angle ... deflecting the heating fluid through its corresponding hole ... baffle plate” as new matter. Support for this claim may be found at Column 3, Lines 39-41, “Tabs 42 preferably extend outwardly at an acute angle with respect to the surface from which they extend.” Further support may be found at Column 4, Lines 33-36, “outwardly extending tabs 42 serve to deflect the heated air flowing through heat transfer tube 16 increasing turbulence and enhancing heat transfer.”

P. Claim 37.

In claim 37, the Examiner cited “...and wherein the tabs are positioned ... heating fluid is flowable through the holes, between the tabs and the heat transfer conduit ... causing increased turbulence ... to improve heat transfer ... for a deep fryer system” as new matter. Referring to Figure 3, it is seen that “[a]s the heated air flows through heat transfer tube 16 it is deflected by tabs 42, increasing the turbulence of the flow within heat transfer tube 16, illustrated by the arrows B shown in FIG. 3. The increased turbulence in heat transfer tube 16 thereby enhances the heat transfer from the heated air, through heat transfer tube 16, to the shortening in the vat.” (Column 4, Lines 8-

14). Figure 3 also illustrates the flow of heating fluid through holes, between tabs, and adjacent to webs.

Q. Claim 38.

In claim 38, the examining attorney cited “the crease of a plurality of tabs ... is directly downstream ... of the creases of the tabs in the rows of tabs ... directly downstream...” as new matter. This configuration of tabs and creases may be seen in Figure 6. In Figure 6, it is seen that a plurality of tabs 42 are directly upstream of a plurality of creases 44. It is also seen in Figure 6 that “longitudinal axis A of each tab 42 is substantially parallel to longitudinal axis L of plate 40.” (Column 5, Lines 10-12).

R. Claim 41.

In claim 41, the examining attorney cited “at least six rows of tabs on the baffle plate...” as new matter. Within the current specification and figures, a row consists of a vertical set of tabs and webs which are generally perpendicular to the longitudinal axis of the baffle plate. (Column 1, Lines 52-55, “A plurality of webs are provided with each web separating a tab from other tabs adjacent in a direction substantially perpendicular to the longitudinal axis of the tab.“) Referring to Figures 7, 8, and 9, it is seen that each illustrated baffle plate consists of at least six rows of tabs.

S. Claim 42.

In claim 42, the examining attorney cited “the baffle plate ... heating fluid is flowable through the holes, between the tabs, adjacent to the webs and between the tabs and the heat transfer conduit ... causing increased turbulence ... to improve heat transfer” as new matter. Referring to Figure 3, it is seen that “[a]s the heated air flows through heat transfer tube 16 it is deflected by tabs 42, increasing the turbulence of the flow within heat transfer tube 16, illustrated by the arrows B shown in FIG. 3. The increased turbulence in heat transfer tube 16 thereby enhances the heat transfer from the heated air, through heat transfer tube 16, to the shortening in the vat.” (Column 4, Lines 8-14). Figure 3 also illustrates the flow of heating fluid through holes, between tabs, and adjacent to webs.

T. Claim 43.

In claim 43, the examining attorney cited “a burner generates products of combustion which flow through said tube from an entrance to an exit” as new matter. Support for this claim may be found at Column 1, Lines 19-20, “A gas burner is provided to heat the gas circulating within the heat exchanger.”

4. Support for Changes to the Specification.

In the Office Action dated April 9, 2004, the examining attorney cited several instances within the specification deemed new matter in contravention of 35 U.S.C. § 132. Each reference will be addressed in turn.

A. Page 4, Lines 14 – 16.

This matter has been cancelled by amendment to the Specification above.

B. Page 4, Line 17.

Applicant respectfully traverses the characterization of the language “caused by the invented baffle plate” as new matter. This clause refers to the increased turbulence of flow within the heat transfer tube. Support for this language may be found at Column 4, Lines 8-14 of U.S. Patent No. 5,901,641 which teaches that “[a]s the heated air flows through heat transfer tube 16 it is deflected by tabs 42, increasing the turbulence of the flow....” The tabs (item 42) are formed by “bending a portion of [baffle] plate 40 outwardly...” (Column 3, Line 51). Therefore, the tabs are an inherent part of the baffle plate and the baffle plate does increase the turbulence of flow.

C. Page 4, Line 18.

Applicant respectfully traverses the characterization of “hot gases” as new matter. Support for the use of “hot gases” in this context may be found at Column 1, Lines 16-17, “[t]he oil may be heated using a flow of heated gas that is forced or drawn through a heat exchanger,” Column 1, Lines 37-38, “improve the heat transfer from heated gas flowing through heat transfer conduits,” and Column 3, Lines 13-17, “[d]ue to its efficiency and economic availability, the heat exchange fluid

generally used in the present invention and in prior art gas fryers is air; however, other gaseous fluids or liquids may of course also be considered....”

D. Page 5, Lines 10-11.

This matter has been cancelled by amendment to the Specification above.

E. Page 5, Lines 18-20.

Applicant respectfully traverse the characterization of “As shown in Figs. 3-5 and 7-10, the relationship of tabs 42 on the baffle plate 40 is to generally present alternating sizes, arrangements and angles to the flowing heated gas and alternating from extending from first surface 43 and then second surface 45, for the purpose of increasing turbulence” as new matter.

Support for this language may be found at Column 4, Lines 60-63, “The number and placement and size of tabs 42 associated with each plate 40 can vary, depending on the flow characteristics that are desired for that particular heat transfer tube.”

In addition, Figures 6-9 illustrate varying sizes, arrangements, and angles of tabs. “[D]rawings alone may be sufficient to provide the ‘written description of the invention’ required by § 112, first paragraph.” *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1565 (Fed. Cir. 1991) (emphasis omitted).

F. Page 6, Line 1.

Applicant respectfully traverses the characterization of “flowing hot gases” as new matter. As noted above, support for the use of “hot gases” in this context may be found at Column 1, Lines 16-17, “[t]he oil may be heated using a flow of heated gas that is forced or drawn through a heat exchanger,” Column 1, Lines 37-38, “improve the heat transfer from heated gas flowing through heat transfer conduits,” and Column 3, Lines 13-17, “[d]ue to its efficiency and economic availability, the heat exchange fluid generally used in the present invention and in prior art gas fryers is air; however, other gaseous fluids or liquids may of course also be considered....”

That the hot gases must “flow” so as to effectively function as a heat transfer agent is well known in the art. Further support for the use of “flowing hot gases” may be found in Figure 3, Item

B, and Column 4, Lines 8-14, “[a]s the heated air flows through heat transfer tube 16 ... illustrated by arrows B....”

In light of the above, Applicant respectfully submits that there is no new matter within the amended Specification respectfully requests the Examiner to withdraw the rejection under 35 U.S.C. § 132.

CONCLUSION

Applicant respectfully requests that this response be considered by the Examiner and a notice of allowance be entered. If the Examiner feels that a telephone conference with the undersigned would be helpful to the allowance of this application, a telephone conference is respectfully requested.

Respectfully submitted,
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